SECTION 6.0

Natural Gas Supply

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This section discusses the natural gas supply for the CVEC project. Section 6.1 describes the proposed gas supply line route and the alternative routes. Section 6.2 discusses the selection criteria. The gas supply line construction methods, metering and valve stations are described in Section 6.3. Pipeline operations are described in Section 6.4. Section 6.5 lists the permits and permitting schedule.

Natural gas would be obtained from a PG&E transmission backbone pipeline (Line 2) located approximately 20 miles west of the project site (Figure 6.1-1). A 24-inch pipeline would be constructed from the PG&E pipeline tap point to the CVEC site.

6.1 Proposed and Alternative Routes

The proposed natural gas pipeline route (Alternative G1) is approximately 20 miles long and ties into the PG&E main pipeline (Line 2) approximately 4 miles east of Interstate 5 adjacent to Manning Avenue. The pipeline would run east adjacent to Manning Avenue for approximately 18 miles. It would then turn south on El Dorado Avenue and then east on Springfield Avenue for another 1.5 miles before terminating at the plant site. Construction is primarily by open trench. Where the pipeline crosses the California Aqueduct, Beta Main Canal, and the Fresno Slough, either horizontal directional drilling (HDD) or "jack and bore" will be used for the crossing.

To determine the optimal route for the gas supply pipeline, alternative routes were evaluated in addition to the proposed route (Alternative G1). All of these routes appear feasible. The two alternative routes considered for the natural gas supply pipeline are described below:

Alternative G2. This alternative is approximately 21 miles long and ties into the PG&E Line 2 approximately 1 mile east of I-5. The pipeline would run east on an unnamed dirt road for approximately 1.5 miles then turn north on Washoe Avenue for 4 miles. It would then turn east on Manning Avenue for 18 miles, south on El Dorado Avenue, and east on Springfield Avenue the same as for Alternative G1. Construction is primarily by open trench. Where the pipeline crosses the California Aqueduct, Beta Main Canal, and the Fresno Slough either HDD or "jack and bore" will be used for the crossing.

Alternative G3. This alternative is approximately 21 miles long and ties into the PG&E main line approximately 1 mile east of I-5 adjacent to Kamm Avenue. The pipeline would run east adjacent to Kamm Avenue for approximately 4.5 miles then turn north on Derrick Avenue (Highway 33) for 2.0 miles. It would then turn east on Nebraska Avenue for 9.1 miles then turn north on Napa Avenue for 1.5 miles. The pipeline would then turn east on Huntsman for 2.7 miles then turn north on Placer Avenue for 1.0 mile until it terminates at the plant site. Construction is primarily by open trench. Where the pipeline crosses the California Aqueduct, Beta Main Canal, and the Fresno Slough either HDD or "jack and bore" will be used for the crossing.

6.2 Selection Criteria

The proposed route and alternative gas pipeline alignments were selected on the basis of engineering/construction feasibility, length of pipeline, cost, and the potential for environmental impacts (see Table 6.2-1):

- Engineering/construction feasibility is an assessment of how the pipeline can be physically placed along a given route.
- Length of pipeline is important because pressure drop, cost, and potential environmental impacts are usually functions of length.
- Cost is an important factor dictated by the deregulated electricity market and the need to keep new generating facilities competitive.
- Environmental impacts must be either not significant or mitigatable to a less than significant level.

There are differences in environmental sensitivity between the various routes.

Initial field surveys indicated the area around Panoche Junction comprises potential habitat for sensitive species and, therefore, Alternatives G2 and G3 would potentially have more biological impacts than Alternative G1.

Alternative G1, the proposed route, is approximately 1 mile shorter than either Alternatives G2 or G3. Although the habitat in the project area is generally quite uniform, the proposed alternative was sited to avoid potential seasonal wetlands, irrigation ditches and minimize the area of natural vegetation that is affected. An area at the west end of Kamm Avenue, for example, is avoided by the proposed alternative rather than Alternative G3. If alternatives are similar, the preference is for shorter distance, and therefore less disturbance. Alternative G1 is proposed environmentally because it avoids known areas of natural habitat, such as Kamm Avenue, and is shorter than the other alternatives.

TABLE 6.2-1
Selection Criteria for Pipeline Alignment Alternatives

Characteristic	Proposed Route (Alternative G1)	Alternative G2	Alternative G3
Engineering/Construction Feasibility	Yes	Yes	Yes
Length of Pipeline (miles)	20	22	21
Cost		More than Proposed Route	More than Proposed Route
Probability of Environmental Impacts	Low	Moderate	Moderate - High

6.3 Construction Practices

The natural gas pipeline would be constructed with a minimum of one crew ("spread") working continuously along the pipeline right-of-way (ROW), with construction of the entire pipeline would require a peak workforce of approximately 111 workers. Workers would park in the construction laydown area of the CVEC site and be transported to the construction area along the pipeline ROW by crew cab trucks, bus, or van, or would take their vehicles directly to the ROW and use their

vehicles during construction. The ROW would be accessed over existing roads to the extent feasible. Most major pieces of construction equipment would remain along the ROW during construction. Besides providing worker parking, the CVEC site would serve as the location for storing pipe and other pipeline construction materials. Additional storage locations would be in existing paved or graveled areas along the pipeline route. Pipeline construction would take 3 to 4 months and is expected to occur during summer 2003.

The temporary ROW for gasline construction will be 75 feet wide, containing a 25-foot-wide spoils side to store excavated earth material and a 50-foot-wide working side for the trench and pipeline construction equipment. If necessary, additional materials storage locations may be located along the pipeline ROW. A permanent 30-foot-wide easement to facilitate leak inspection and related monitoring or maintenance activities will be required.

The line pipe would be of alloyed carbon steel in accordance with the American Petroleum Institute (API) specification for line pipe. The pipe would have factory-applied corrosion protection coating. Joints would be welded and inspected by X-ray.

The construction of the natural gas pipeline would consist of the following:

1. **Trenching** –A trench up to 8 feet wide at the top and 3 feet wide at the bottom will be excavated Trench width depends on the type of soils encountered and requirements of the governing agencies. The pipeline will be buried to provide a minimum cover of 36 inches. The excavated soil will be piled on one side of the trench and used for backfilling after the pipe is installed. The pipeline will be installed through trenching at all locations except where boring or directional drilling is required to pass beneath a road, natural watercourse, canal, or to avoid sensitive areas.

2. **Stringing** – Stringing consists of trucking lengths of pipe to the ROW and laying them on wooden skids beside the open trench.

3. **Installation** – Installation consists of bending, welding, and coating the weld joint areas of the pipe after it has been strung, padding the ditch with sand or fine spoil, and lowering the pipe string into the trench. Bends will be made by a cold bending machine or shop-fabricated as required for various changes in bearing and elevation. Welding would meet the applicable API standards and be performed by qualified welders. Welds would be inspected in accordance with API Standard 1104. Welds will undergo 100 percent radiographical inspection by an independent, qualified radiography contractor. All coating will be checked for holidays (i.e., defects) prior to lowering into the trench.

4. **Backfilling** – Backfilling consists of returning spoil back into the trench around and on top of the pipe, ensuring that the surface is returned to its original grade or level. The backfill will be compacted to protect the stability of the pipe and to minimize subsequent subsidence.

5. **Plating** – Plating is not normally required.

6. **Boring** – The boring method may be used for moderately short crossings under roads, canals, sensitive habitats, or where dictated by governmental agency, or where it would be environmentally unsound to use the open cut method. Boring pits will be dug on each side of the crossing. On the inlet side, an auger-bearing boring machine, or a ramming device may be used to "jack and bore" pipe into place. "Jack and bore" is less expensive on a per-foot basis than HDD.

7. **Horizontal Directional Drilling** – HDD, which could be used to route the pipeline under wetlands, canals, and major roads, involves specialized construction procedures. The HDD equipment initially drills a pilot hole, which is followed by a pilot hole drill string. A reaming device is then attached to the drill string and pulled through the pilot hole. The reamer enlarges

the pilot hole to a diameter of 35 to 50 percent greater than the final pipeline size. The pipeline is then welded, radiographed, hydrotested, and pulled through the enlarged borehole.

8. **Drilling Mud** – Drilling mud is used as part of the HDD process to lubricate and cool the drill. The mud is non-toxic bentonite. The drilling mud will be collected at the directional drilling site and disposed of at a Class III landfill.

9. **Hydrostatic Testing** – Hydrostatic testing consists of filling the pipeline with fresh water, venting all air, increasing the pressure to the specified code requirements, and holding the pressure for a period of time. After hydrostatic testing, the test water is chemically analyzed for contaminants and discharged into a dewatering structure consisting of hay bales, geotextile fabric, and silt fencing. The discharged water filters through the hay bales and silt fence onto jute matting before it is discharged. Temporary approvals for test water use and permits for discharge will be obtained as required by the construction contractor.

10. **Cleanup** – Cleanup consists of restoring the surface of the ROW by removing any construction debris, grading to the original grade and contour, and revegetating and repairing where required.

11. **Commissioning** – Commissioning consists of cleaning and drying the inside of the pipeline, purging air from the pipeline, and filling the pipeline with natural gas. Depending on the timing of first gas consumption, an inert gas such as nitrogen could be used to purge the line prior to filling with natural gas.

12. **Safety** – A construction safety plan will be prepared for the project. This plan will address specific safety issues, traffic control, working along traveled county streets, and other areas as required by permits.

6.3.1 Metering Station

A gas metering station will be required at the interconnection point with PG&E's transmission pipeline. The metering station will require an area of approximately 0.3 acre (150 feet by 100 feet), and a power source from the nearest utility distribution line.

Construction activities related to the metering station will include grading a pad; installing aboveground gas piping, metering equipment; and possibly gas conditioning, pressure regulation, and pigging facilities. A distribution powerline for metering station operation lighting, communication equipment, and perimeter chain link fencing for security will also be installed.

6.3.2 Mainline Valve Stations

In keeping with Pipeline Safety Regulations, two mainline valve stations will be installed on the pipeline to isolate and blowdown the line if required. These valve stations will be located in the vicinity of 1) Manning and Calaveras Avenue and 2) Manning and Washoe Avenue, and will require an area of approximately 30 feet by 100 feet. The valves will be manually operated.

Construction activities related to the valve stations will include grading a pad and installing aboveground gas piping and a blowdown vent. No exterior lighting or communications are planned for these sites. A perimeter chain link fencing for security will also be installed.

6.4 Pipeline Operations

The proposed natural gas supply pipeline will be designed, constructed, and operated in accordance with Title 49, Code of Federal Regulations, Part 192 (49 CFR 192). Specifically, the pipeline will be designed in accordance with the standards required for gas pipelines in proximity to populated areas,

based on actual population densities along the proposed pipeline route. It will be buried a minimum of 36 inches, or deeper, as required by Federal Code.

An operations and maintenance plan will be prepared, addressing both normal procedures and conditions, and any upset or abnormal conditions that could occur. Periodic cathodic protection surveys will be performed along the pipeline, as required by 49 CFR 192. The pipeline will be continuously protected by a cathodic protection system.

The Applicant will implement a proactive damage prevention program for the proposed pipeline. Markers identifying the location of the pipeline will be placed at all road crossings. The markers will identify a toll-free number to call prior to any excavation in the vicinity of the pipeline.

The transported gas will be as received from PG&E's main pipeline. The owners of the proposed pipeline will develop an emergency plan to provide prompt and effective responses to upset conditions detected along the pipeline or reported by the public.

Isolation block-valves will be installed at both ends of the pipeline. These valves will be manually controlled, lockable, gear-operated ball valves. PG&E will have access to the isolation block-valve at the mainline tap; CVEC will have access to the downstream isolation ball valve at CVEC property. PG&E will own and operate a metering facility to measure the gas supply to CVEC. A pipeline Supervisory Control and Data Acquisition (SCADA) system will provide flow rate and pressure data to PG&E and CVEC. Communication with PG&E gasline operations will be by dedicated telephone lines or other means, such as Cellular Digital Pocket Data (CDPD).

6.5 Permits and Permitting Schedule

The California Streets and Highways Code, Division 2, Chapter 5.5, Sections 1460-1470, mandates that an encroachment permit must be obtained from the public works department of jurisdiction if there is an opening or excavation for any purpose in any highway. This and other permits, as well as the schedule for obtaining the permits, is presented in Table 6.5-1.

A copy of the interconnection letter from PG&E is presented in Appendix 6A.

TABLE 6.5-1
Permit Schedule for Gas Supply Lines

Permit or Approval	Schedule	Applicability	Contact
City of San Joaquin Encroachment Permit	6 weeks prior to construction	Installation of natural gas and waterline facilities for project (Municipal Code 12.04.080)	Shahid Hami City Manager 21900 Colorado P.O. Box 758 San Joaquin, CA 93660 559-693-4311
Easement	3 months prior to construction	Installation of linear facilities on private property	Individual landowners along route
Fresno County Encroachment Permit/Plan Review, Fresno County General Ordinance Code Chapter 13.08 (Private Improvements Within Road Rights-of-Way)	6 weeks prior to construction	Installation of natural gas and waterline facilities for project (General Ordinance Code, Chapter 13.08)	Fresno County Public Works Department Brett Connor Permit Engineer 2220 Tulare, 7th Floor Fresno, CA 93721 559-262-4078

TABLE 6.5-1
Permit Schedule for Gas Supply Lines

Permit or Approval	Schedule	Applicability	Contact
Fresno County Franchise Agreement	6 weeks prior to construction	Installation of linear facilities within County right-of-way	Fresno County Public Works Department Brett Connor Permit Engineer 2220 Tulare, 7th Floor Fresno, CA 93721 559-262-4078
Temporary Dewatering Permit	Prior to disposal	Disposal of intruded groundwater or stormwater in pipeline trenches during construction	RWQCB Brian Earlenson Water Resource Control Engineer 3614 Ashlan Fresno, CA 95726 559-445-6071

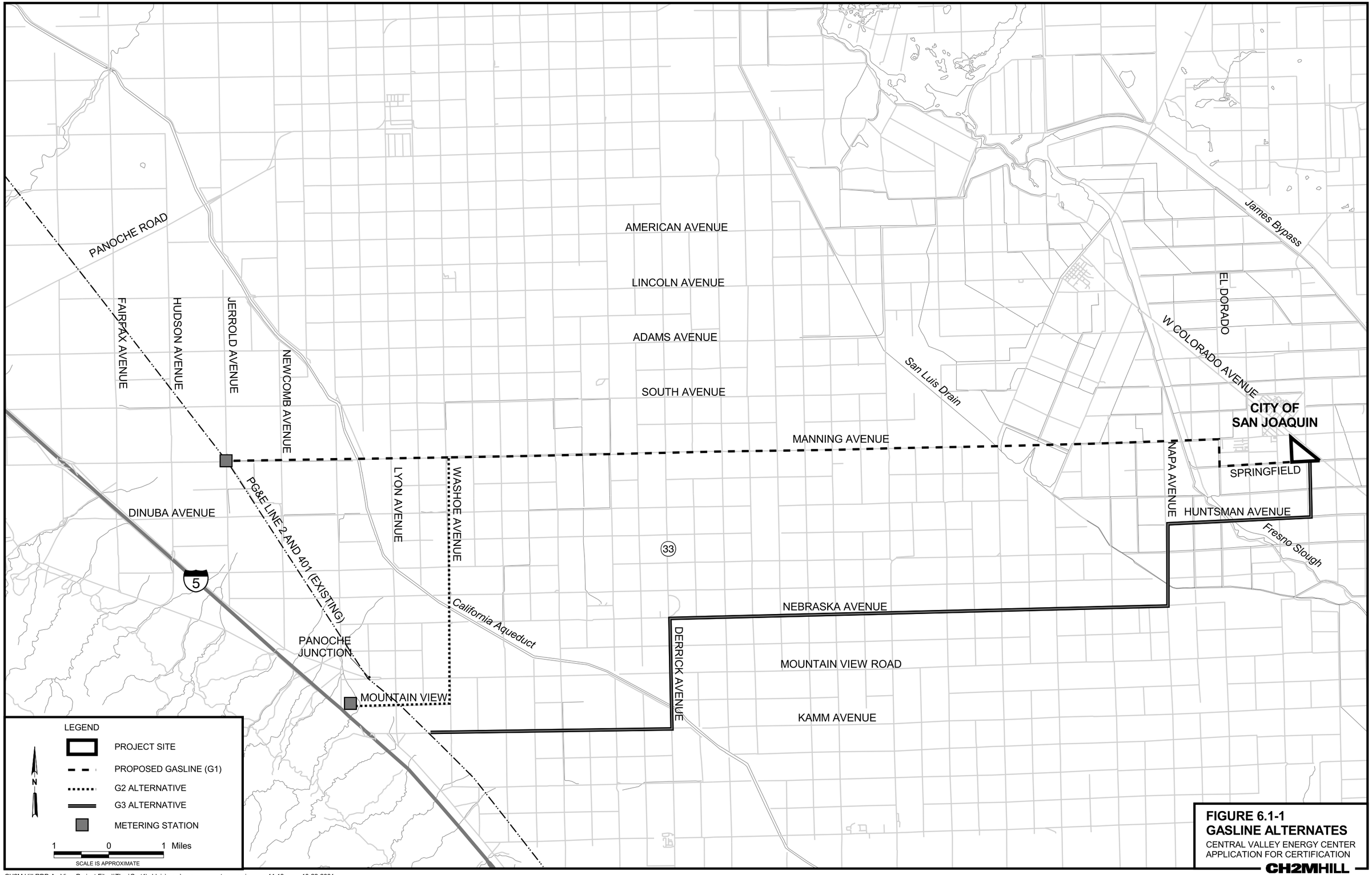

FIGURE 6.1-1
GASLINE ALTERNATES
CENTRAL VALLEY ENERGY CENTER
APPLICATION FOR CERTIFICATION

CH2MHILL

CH2M Hill RDD ArcView Project File \\Thor\Cart1\rddgis\cvec\cvec_gas_water_species.apr 11:18 p.m. 10-22-2001